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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MULL, FRED H

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/691,751

Applicant(s)

HALSEY ET AL.

Examiner

Fred H. Mull

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8-16-2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15, 17 and 19-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15, 17 and 19-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

35 USC § 112 6th Paragraph

The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

1. Claim(s) 8-9 and 11 is/are interpreted by the examiner as invoking 35 USC 112 6th paragraph (means plus function). See MPEP § 2181.

Claim Objections

2. Claim(s) 2 is/are objected to under 37 CFR 1.75. In line 1, --at least one-- should be added after "said". There is insufficient antecedent basis for this limitation in the claim. Correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5-6, 15, 19, 21-22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Culpepper.

In regard to claims 1, 19, and 24, Culpepper discloses:

Art Unit: 3662

a signal emitter coupled to said object (19, Fig. 1; col. 2, lines 56-62), said emitter for broadcasting a signal having a wavelength longer than said feature size (col. 6, line 44, where 347 MHz is equivalent to a wavelength of 0.86 meters or 2.8 feet, and a structure for storing currency, e.g. a briefcase or suitcase or bag or backpack, typically has at least one dimension smaller than 2.8 feet);

at least three mutually dispersed base station sites for receiving said signal from said signal emitter at each base station site (14, 16, 18);

at least one phase sensing circuit for determining phase information for each received signal (136, Fig. 7; col. 1, lines 57-65); and

a central processing site connected in communication with each said base station site (20), said central processing site having a processor for using said phase information to determine the location of said signal emitter relative to each said base station site (col. 3, lines 26-30).

In regard to claim 5, Culpepper further discloses said processor uses said phase information to calculate at least one relative phase delay to determine the location of said signal emitter relative to each said base station site (abstract, final sentence).

In regard to claim 6, Culpepper further discloses said at least one phase sensing circuit is a phase sensing circuit located at said central processing site, and wherein each said base station site has a transmitter for relaying said received signal to said central processing site, and wherein said phase information is a relative phase delay (Fig. 1; col. 2, line 56 to col. 3, line 30; 136, Fig. 7).

Art Unit: 3662

In regard to claim 15, 347 MHz is approximately equal to 27 MHz, considering the electromagnetic spectrum from ELF waves to gamma rays covers 24 orders of magnitude.

In regard to claim 21, Culpepper further discloses that the third antenna resolves at least one phase-related ambiguity in said set of possible signal emitter locations (col. 7, lines 56-68).

In regard to claim 22, Culpepper further discloses the said step of eliminating at least one phase-related ambiguity uses a prior information regarding the third antenna, i.e. whether it is in front or in back of the other pair of antennas (which are side by side) relative to the police car.

4. Claims 1, 5, 10-13, 15, 19, 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by IDS document Maloney.

In regard to claims 1, 19, and 24, Maloney discloses:

a signal emitter coupled to said object (108, Fig. 1), said emitter for broadcasting a signal having a wavelength longer than said feature size (col. 3, lines 41-45, where the HF, VHF, and UHF range encompasses 27 MHz, which is the value used by applicant);

at least three mutually dispersed base station sites for receiving said signal from said signal emitter at each base station site (103-104; col. 3, lines 45-46);

at least one phase sensing circuit for determining phase information for each received signal (col. 3, lines 3-22); and

Art Unit: 3662

a central processing site connected in communication with each said base station site (105), said central processing site having a processor for using said phase information to determine the location of said signal emitter relative to each said base station site (col. 3, lines 45-59).

In regard to claim 5, Maloney further discloses said processor uses said phase information to calculate at least one relative phase delay to determine the location of said signal emitter relative to each said base station site (col. 6, line 66 to col. 8, line 2).

In regard to claim 10, Maloney further discloses said communication between said base station sites and said central processing site is wireless (103-104, 105, Fig. 1; col. 4, lines 37-42).

In regard to claims 11 and 25, Maloney further discloses said signal emitter is a first signal emitter and said signal is a first signal and further comprising a second signal emitter for emitting a second signal, and wherein said first signal emitter has a signal and said second signal emitter has a means for modulating a second emitter identification code onto said second emitter signal, and wherein each said base station site has a filter to separate said first emitter signal from said second emitter signal (col. 4, lines 54-64).

In regard to claims 12 and 27, Maloney further discloses said signal emitter is a first signal emitter and said signal is a first signal and further comprising a second signal emitter for emitting a second signal, and wherein said first emitter signal and said second emitter signal have different frequencies, and wherein each said base station

Art Unit: 3662

site has a filter to separate said first emitter signal from said second emitter signal (col. 3, lines 59-63).

In regard to claims 13 and 26, Maloney further discloses said signal is a first emitter is a first signal emitter and signal and further comprising a second signal emitter for emitting a second signal, and wherein each said base station sites has a time division multiple access filter to allow a portion of said first emitter signal and a portion of said second emitter signal to be received at each said base station site (col. 3, lines 59-63).

In regard to claim 15, Maloney further discloses said signal has a frequency of approximately 27 MHz (col. 3, lines 41-45, where the HF, VHF, and UHF range encompasses 27 MHz).

5. Claims 1-2, 10-11, 15, 19, 21, and 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson.

In regard to claims 1, 19, and 24, Anderson discloses:

a signal emitter coupled to said object (10, Fig. 1), said emitter for broadcasting a signal having a wavelength longer than said feature size (col. 1, lines 39-43, where the tone burst is a signal broadcast from the emitter; col. 2, lines 42-47, where 3150 Hz is equivalent to a wavelength of 95,000 meters or 310,000 feet, and any typical structure has at least one dimension smaller than 310,000 feet);

at least three mutually dispersed base station sites for receiving said signal from said signal emitter at each base station site (11-14);

Art Unit: 3662

at least one phase sensing circuit for determining phase information for each received signal (26, Fig. 2; col. 1, lines 39-58); and

a central processing site connected in communication with each said base station site (16), said central processing site having a processor for using said phase information to determine the location of said signal emitter relative to each said base station site (col. 1, lines 39-58).

In regard to claim 2, Anderson further discloses at least one of said phase sensing circuit is located at each said base station site (Fig. 2), and wherein said base station site further comprises a reference signal for synchronized with said signal emitter and in communication with said phase sensing circuit, and where said phase information is an actual phase delay (col. 1, line 37 to col. 2, line 14; col. 2, line 69 to col. 3, line 13).

In regard to claim 10, Anderson further discloses said communication between said base station sites and said central processing site is wireless (col. 2, lines 69-75).

In regard to claims 11 and 25, Anderson further discloses said signal emitter is a first signal emitter and said signal is a first signal and further comprising a second signal emitter for emitting a second signal, and wherein said first signal emitter has a signal and said second signal emitter has a means for modulating a second emitter identification code onto said second emitter signal, and wherein each said base station site has a filter to separate said first emitter signal from said second emitter signal (col. 1, line 67; col. 2, lines 36-41).

Art Unit: 3662

In regard to claim 3150 Hz is approximately equal to 27 MHz, considering the electromagnetic spectrum from ELF waves to gamma rays covers 24 orders of magnitude.

In regard to claim 21, Anderson further discloses that the third antenna resolves at least one phase-related ambiguity in said set of possible signal emitter locations (col. 2, lines 58-68).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maloney, as applied to claim 1, and in further view of IDS document Yokey '517.

Maloney further discloses at least one of said phase sensing circuit is located at each said base station site (214, Fig. 2).

Maloney fails to disclose a reference signal for synchronization between the mobile unit and the base stations.

Yokey teaches that a reference signal for synchronization between the mobile unit and the base stations is necessary to ensure that the units are transmitting at the same time that the base stations are listening (col. 5, lines 48-57). This is especially important since Maloney can employ TDMA (col. 3, lines 59-63).

Art Unit: 3662

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Culpepper, as applied to claim 1, and in further view of IDS document Yokev '517.

Culpepper further discloses at least one of said phase sensing circuit is located at said central processing site (col. 1, lines 56-65).

Culpepper fails to disclose a reference signal for synchronization between the mobile unit and the base stations.

Yakev teaches that a reference signal for synchronization between the mobile unit and the base stations is necessary to ensure that the units are transmitting at the same time that the base stations are listening (col. 5, lines 48-57). This is especially when TDMA is employed, as discussed with regard to claims 13 and 26, below.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over either of Culpepper and Maloney, as applied to claim 1.

It is well known that a three dimensional arrangement of antennas provides the best resolution for a three dimensional location determination.

9. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maloney, as applied to claim 1.

It is well known to determine the positions of cellular base stations using GPS.

10. Claims 11-13, 17, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Culpepper, as applied to claim 1.

Art Unit: 3662

It would have been obvious to provide the invention to multiple banks, rather than just one bank, as it is unknown which bank robbers may rob, and authorities will want to apprehend any robber who robs any bank. With multiple emitters, it would be obvious to assign each an identification, using different codes, frequencies, time slots, or polarizations, in order to distinguish them.

11. Claim 12-13, 17, and 26-27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson, as applied to claim 1.

Using different codes, frequencies, time slots, or polarizations are well known interchangeable methods to distinguish mobile devices.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maloney, as applied to claim 1.

Using different codes, frequencies, time slots, or polarizations are well known interchangeable methods to distinguish mobile devices.

13. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maloney, as applied to claim 19.

It is well known to space base stations apart for location finding, because locations determined from closely spaced base stations are less accurate than those from base stations with greater spacing.

Art Unit: 3662

14. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maloney, as applied to claim 19.

It is well known to space base stations apart for location finding, because locations determined from closely spaced base stations are less accurate than those from base stations with greater spacing.

15. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Culpepper, as applied to claim 21.

The maximum likelihood method is a well known estimation algorithm.

16. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Culpepper, as applied to claim 24.

It would have been obvious to provide a motion sensor to let the police immediately know whether or not the robbers are moving, without have to wait and then do a second position measurement. For example, an accelerometer would indicate the direction and velocity of the robbers are traveling, so police that think they are closing in on stationary robbers don't suddenly find themselves in the path of a speeding escape car.

Additionally, it would be obvious to provide a battery level sensor to give the police a heads up when the battery will be dying, so they can take precautions rather than having the signal die suddenly.

Art Unit: 3662

17. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over either of Maloney or Anderson, as applied to claim 24.

It would be obvious to provide a battery level sensor to inform the user when the battery of the mobile device needs to be changed.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 703-305-1250. The examiner can normally be reached on M-F 9:00 - 5:00.

Art Unit: 3662

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 703-360-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred H. Mull
Examiner
Art Unit 3662

fhm


GREGORY C. ISSING
PRIMARY EXAMINER